ASS NOTE 25
NIC #12734

L. Kleinrock and S. S. Lam
UCLA
20 November 1972

CORRECTION FOR ASS NOTE 12

L. Roberts observed the following inconsistency in ASS Note 12: as $\sigma \downarrow 0$, the ratio $\frac{\sigma}{\gamma}$ (instead of converging to 1) is a function of $\frac{k-1}{k}$. This is due to the use of P[blocked previously] = $\frac{p}{q_t + p}$ in Equation (5) of ASS Note 12, which is inconsistent with the model assumption: given a packet has arrived, we know the current state (new or retransmitted) of the packet; all earlier packet arrivals are assumed to occur according to a Poisson distribution with the rate γ. With this assumption, P[blocked previously] = $1 - e^{-\gamma}$.

Since $\lim_{k\to\infty} \frac{p}{q_t + p} = 1 - e^{-\gamma}$, all other equations in ASS Notes 12 and 17 remain valid. However, the numerical solutions for finite k are changed. Figures 1-5 given below will replace all the figures in ASS Notes 12 and 17.

FIG. 1 Prob[success/blocked] & Prob[success/new] vs. k

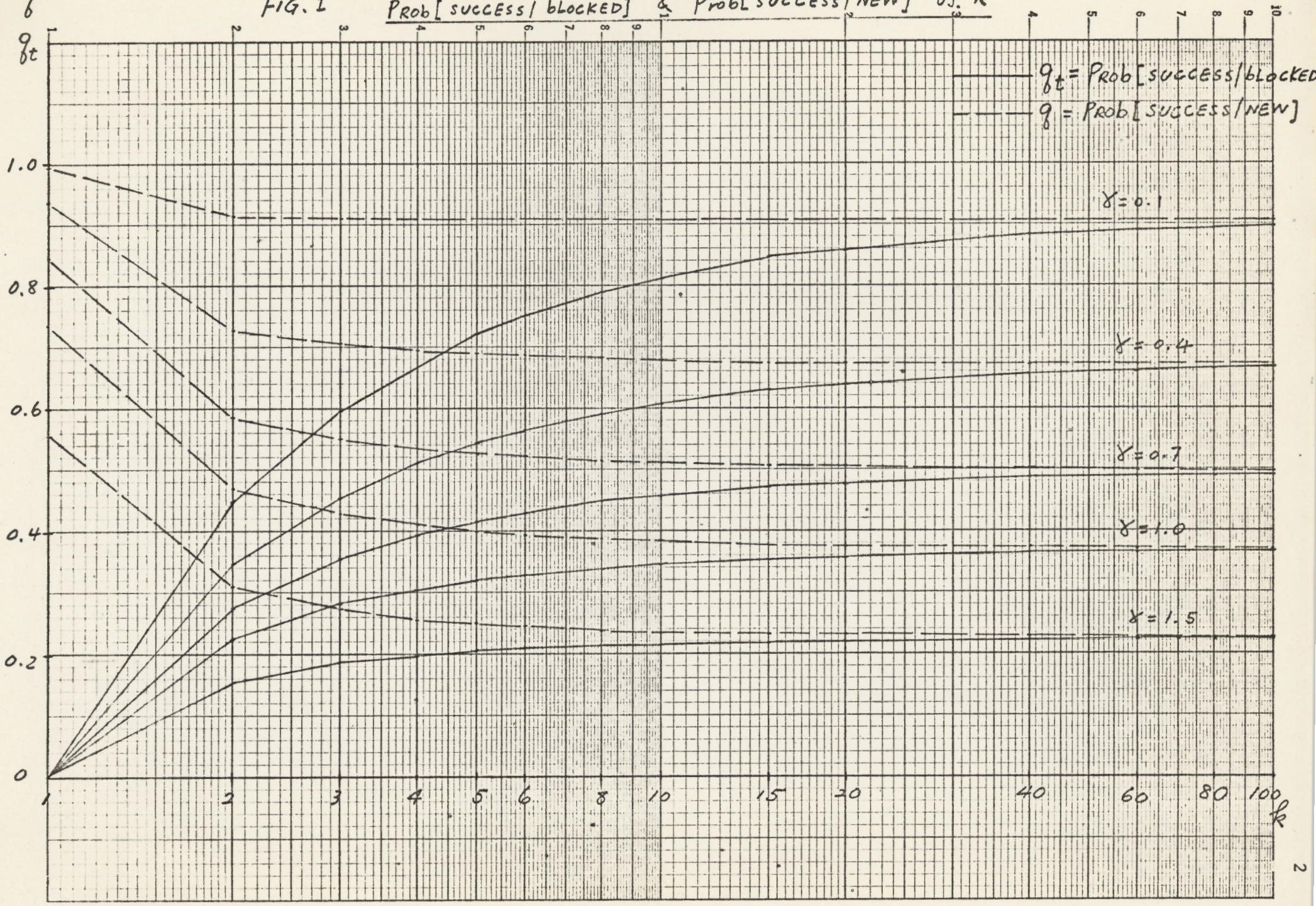

FIG. 2 Prob [SUCCESS | BLOCKED PREVIOUSLY] vs. k

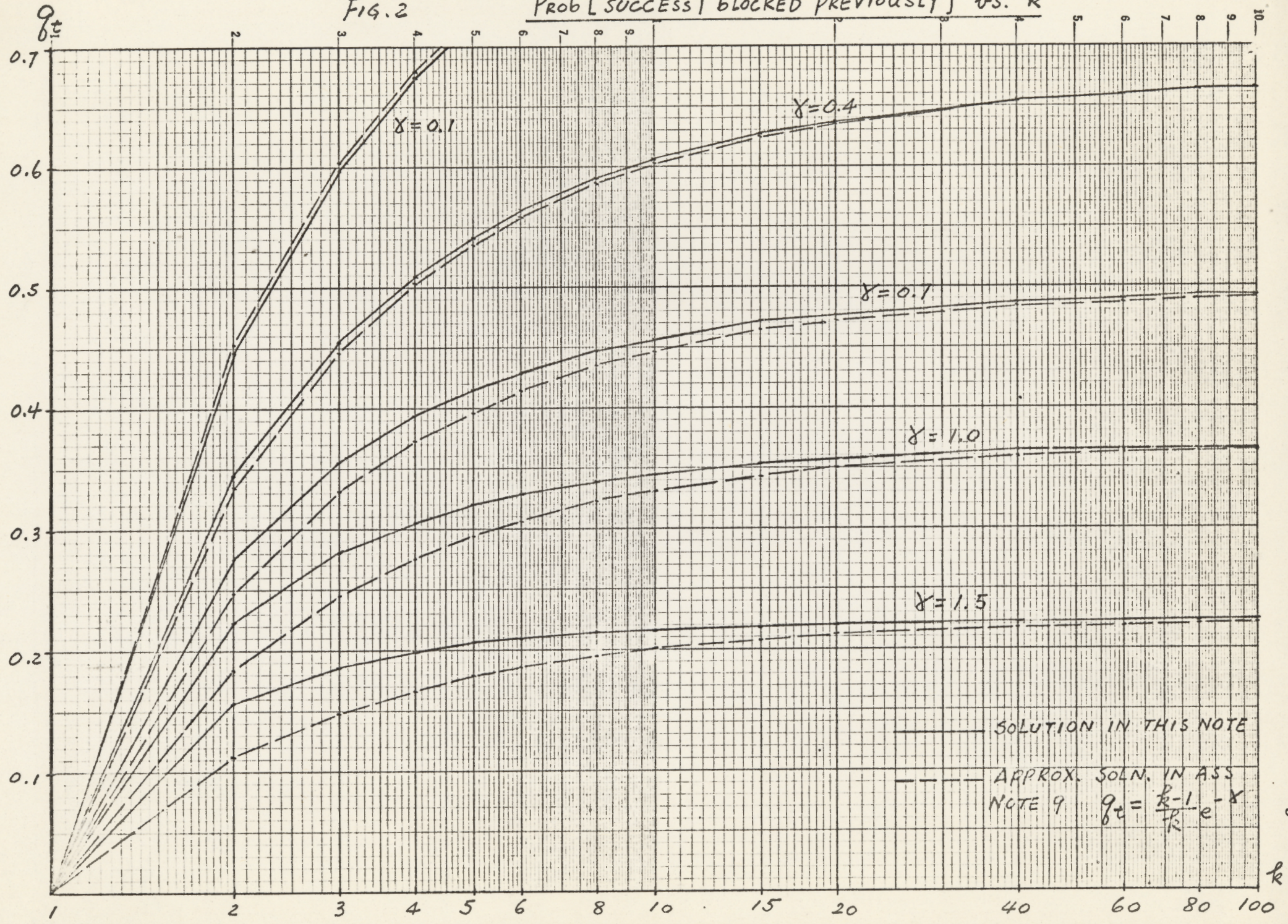

FIG. 3

THROUGHPUT RATE σ VS. k

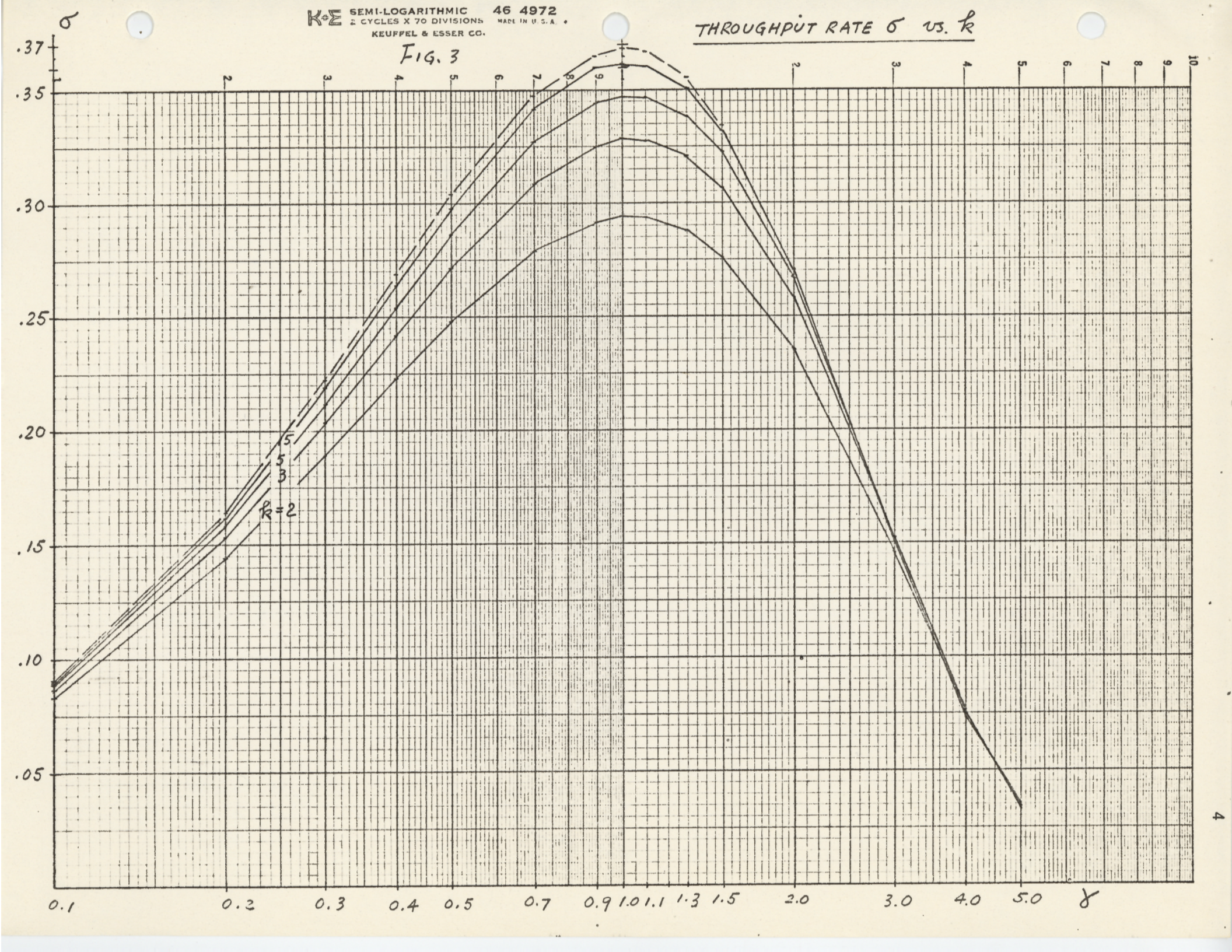

FIG. 4 EXPECTED PACKET DELAY VS. k

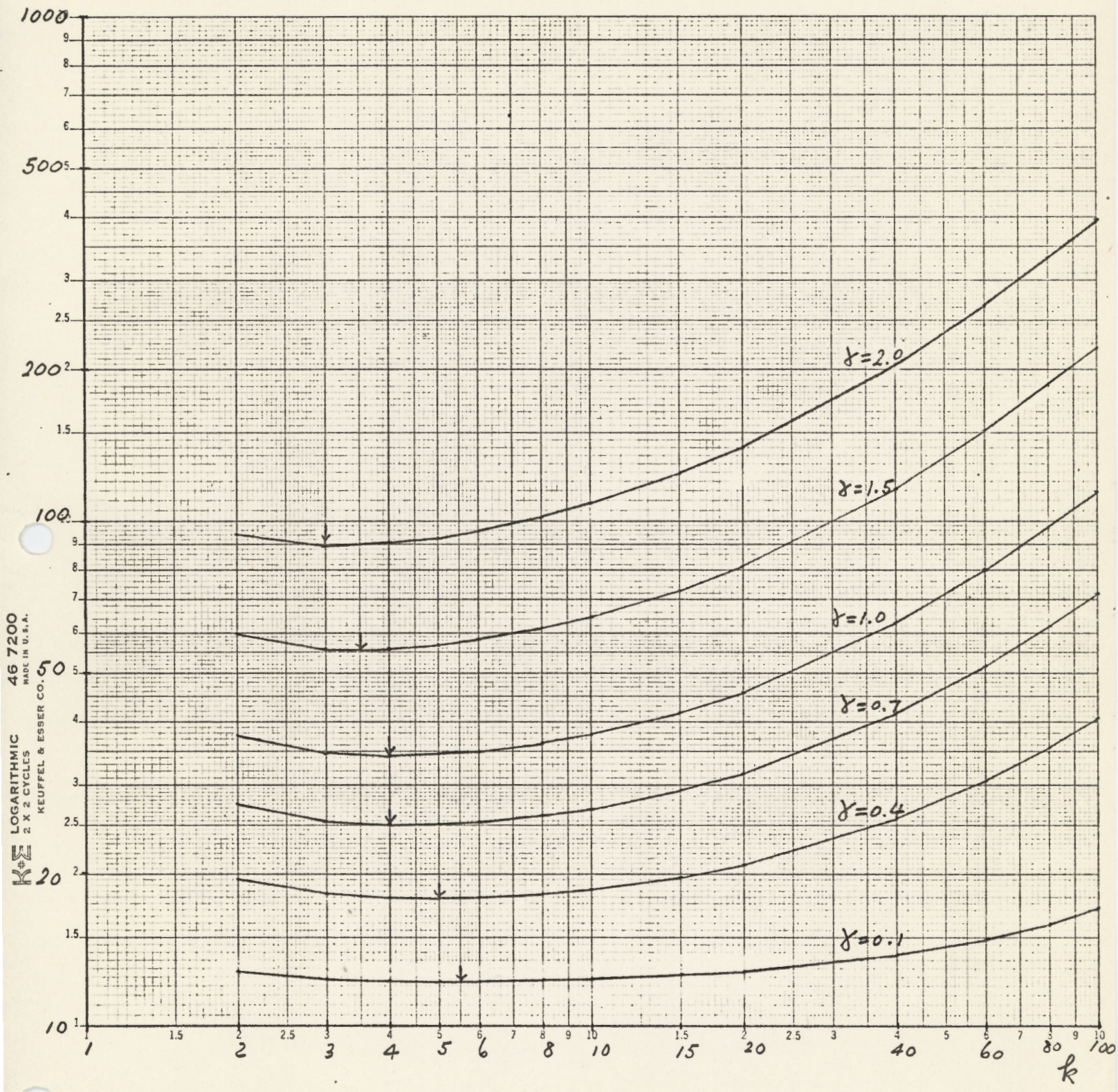

FIG. 5 k_{OPT} FOR MINIMUM DELAY VS. γ